

### ABSTRACT

An ablation catheter used for treatment of, for example, atrial fibrillation by electrically isolating a vessel, such as a pulmonary vein, from a chamber, such as the left atrium. The ablation catheter has a virtual electrode and a catheter shaft. The virtual electrode comprises a porous conductor. The catheter shaft includes a proximal portion and a distal portion. The distal portion includes an active region, which is either a looped structure transverse to the longitudinal axis of the catheter shaft, or a linear structure that extends parallel to the longitudinal axis of the catheter shaft. During use, the active region is directed into contact with, for example, the wall of a pulmonary vein and, upon energization, the virtual electrode creates a continuous lesion at or near the ostium of the pulmonary vein, thereby electrically isolating the pulmonary vein from the left atrium.